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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/709,833

Filing Date: June 01, 2004

Appellant(s): LI ET AL.

Robert G. Bachner (registration number 60,122)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/08/2009 appealing from the Office action mailed 02/10/2009.

Application/Control Number: 10/709,833
Art Unit: 2624

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(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

The real party in interest for this appeal and the present application is Xerox Corporation, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 014676, Frame 0262.

(2) Related Appeals and Interferences

To the best of Appellants' knowledge, there are no prior or pending appeals, interferences or judicial proceedings, known to any inventor, any attorney or agent who prepared or prosecuted this application or any other person who was substantively involved in the preparation or prosecution of this application, that may be related to, or that will directly affect or be directly affected by or have a bearing upon, the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of no Amendments After Final

The appellant's statement of the status of no amendments After-Final contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Lin, U.S. Patent Application Publication No. 2002/0076103 in view of "Appellants' Admitted Prior Art Background section".

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al., "Lin" (U.S. Publication number 2002/0076103 A1) in view Applicant's admitted prior art" background section".

Regarding claims 1 and 8, Lin discloses a pixel classification method and apparatus (see *item 46, fig.7, classification means*), comprising:

determining a background intensity level of an image (see paragraph [0041], the output of the block based segmentation module 200 preferably is a three-layered mixed raster content file. Preferably, these layers represent background, foreground and [0047] and [0052] the image data comprises multiple scanlines of pixel image data, each scanline typically including intensity information for each pixel within the scanline.

Typical image types include graphics, text, low-frequency halftone, high-frequency halftone, contone, etc).

classifying a pixel of the image (see item 46, fig. 7 classification means and paragraph [0057] the statistics are examined in an attempt to classify each window. Windows that appear to contain primarily a single type of image data are classified according to their dominant image types); and

confirming the classification of the pixel based on the determined background intensity level of the image by comparing the intensity of the pixel with the determined background intensity level (see paragraph [0053], each pixel is examined and preliminary determination is made as to the image type of the pixel. In addition, the intensity of each pixel is compared to the intensity of its surrounding neighboring pixels. A judgment is made as to whether the intensity of the pixel under examination is significantly different than the intensity of the surrounding pixels);

determining if reclassification is required (see paragraphs [0054] and [0059]); and reclassifying the pixel when reclassification is required (see paragraph [0054] and [0059] pixel is within a window that was classified as "mixed" during the first pass, micro-detection, macro-detection and windowing steps performed during the second pass are used to assign an image type to the pixel).

Lin does not disclose the background intensity level being based on substantially all of the pixels of the image.

However, Applicant's admitted prior art discloses conventionally background detection is performed by sampling pixel values either with a sub-region of the

document or across the whole document (*i.e., being based on substantially all of the pixel values (intensity level) of the image (see paragraph [0012]).*

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Applicant's admitted prior art teachings to modify Lin's method by detecting the background based on substantially all of the pixels' intensity level of the image in order to more accurately reproduce the image, *[Applicant's admitted prior art see paragraph [0009] lines 6-10].*

Regarding claim 2, *Lin discloses the pixel classification method of claim 1, wherein the determining step comprises determining a white point of the image (see paragraph [0071] like wise, a common type of image is text of different colors on a white background), and Applicants admitted prior art further discloses determining at least one characteristic (background of substantially all of the pixel values of the image (see paragraph [0012] conventionally, background detection is performed by sampling pixel values either within a sub-region of document (typically, the leading edge) or across the whole document) and combined method of Lin and Applicant's admitted prior art determining a white point of the image based on at least one characteristic of substantially all of the pixels of the image).*

Regarding claim 3, *Lin discloses the pixel classification method of claim 2, wherein the checking confirming step comprises comparing the intensity of the pixel with an intensity of the white point of the image (see paragraph [0052], [0053] and [0071] likewise, a common type image is text of different colors on a white background).*

Regarding claim 4, *Lin discloses the pixel classification method of claim 3, further comprising wherein the reclassifying step includes reclassifying the pixel as background when the pixel is classified as a class eligible to be reclassified and the intensity of the pixel is not less than the intensity of the white point of the image (see paragraph [0054], [0059] and [0071], likewise, a common type of image is text of different colors on a white back ground).*

Regarding claim 5, *Lin discloses the pixel classification method of claim 3, further comprising wherein the reclassifying step includes reclassifying the pixel as one of smooth contone and an equivalent class when the pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image (see paragraph [0052], [0054], [0059] and [0071], likewise, a common type of image is text of different colors on a white back ground).*

Regarding claim 6, *Lin discloses the pixel classification method of claim 1, wherein the identifies identifying a spread of intensity levels of the pixels of the image and determining step comprises determining an intensity level of a majority of the pixels (see paragraph [0053] and [0056] statistics are gathered and calculated for each of the window. The statistics are based on the intensity and macro-detection results for each of the pixels within a window), Applicants admitted prior art further discloses sampling pixel values either within a sub-region (as disclosed by Lin) or across the whole document image [paragraph [0012] and the combined method of Lin and Applicant's admitted prior art is using the intensity level of substantially all pixels of the document.*

Regarding claim 7, *Lin discloses the pixel classification method of claim 4, wherein the pixel is classified as smooth contone (see paragraph [0052] the image data comprises multiple typically including intensity information for each pixel within the scanline. Typical image types include graphics, text, low-frequency halftone, high-frequency halftone, contone, etc and paragraph [0057]).*

Regarding claim 9, *Lin discloses the pixel classification apparatus of claim 8, wherein the background intensity level determining module determines a white point of the image (see paragraph [0041] the output of the block based segmentation module 200 preferably is a three-layered mixed raster content file. Preferably, these layers represent background, foreground and selectors fields and paragraph [0052] intensity and paragraph [0071] Likewise, a common type of image is text of different colors on a white background) and Applicant admitted prior art further discloses based on a characteristic of substantially all of the pixels of the image (see paragraph [0012] conventionally, background detection is performed by sampling pixel values either within a sub-region of document (typically, the leading edge) or across the whole document).*

Regarding claim 10, *Lin discloses the pixel classification apparatus of claim 9, wherein the image processing module checks confirms the classification of the pixel by comparing the intensity of the pixel with the intensity of the white point of the image (see paragraph [0053], In addition, the intensity of each pixel is compared to the intensity of its surrounding neighboring pixels. A judgment is made as to whether the intensity of the pixel under examination is significantly different than the intensity of the surrounding*

pixels and paragraph [0071] likewise, a common type of image is text of different colors on a white background).

Regarding claim 11, *Lin discloses the pixel classification apparatus of claim 10, wherein when a pixel is classified as a class eligible to be reclassified and the intensity of the pixel is not less than the intensity of the white point of the image, the pixel is reclassified as background (see paragraph [0052], [0053], [0054] and [0071], Likewise, a common type of image is text of different colors on a white background).*

Regarding claim 12, *Lin discloses the pixel classification apparatus of claim 10, wherein when a pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image, the pixel is reclassified as smooth contone (see paragraph [0052], [0053], [0054] and [0059] pixel is within a window that was classified as "mixed" during the first pass, the micro-detection, macro-detection and windowing steps performed during the second pass are used to assign an image type to pixel).*

Regarding claim 13 refer to claim 6 rejection.

Regarding claim 14, *Lin discloses the pixel classification apparatus of claim 11, wherein the pixel is classified as one of smooth contone and an equivalent class (see paragraph [0053] and [0057] the image data comprises multiple scanlines of pixel image data, each scanline typically including intensity information for each pixel within the scanline. Typical image types include graphics, text, low-frequency halftone, high-frequency halftone, contone, etc).*

Regarding claim 15, *Lin discloses an image processing method, comprising:*

determining a background intensity level of an image (see paragraph [0041], the output of the block based segmentation module 200 preferably is a three-layered mixed raster content file. Preferably, these layers represent background, foreground and [0047] and [0052] the image data comprises multiple scanlines of pixel image data, each scanline typically including intensity information for each pixel within the scanline. Typical image types include graphics, text, low-frequency halftone, high-frequency halftone, contone, etc);

classifying a pixel of the image (see item 46, fig. 7 classification means and paragraph [0057] the statistics are examined in an attempt to classify each window. Windows that appear to contain primarily a single type of image data are classified according to their dominant image types); and

checking the classification of at least a portion of the pixels of the image based on the determined background intensity level of the image (see paragraph [0053], each pixel is examined and preliminary determination is made as to the image type of the pixel. In addition, the intensity of each pixel is compared to the intensity of its surrounding neighboring pixels. A judgment is made as to whether the intensity of the pixel under examination is significantly different than the intensity of the surrounding pixels);

reclassifying pixels based on results of the checking step (see paragraph [0054] and [0059] if a pixel is within a window that was classified as "mixed" during the first pass, micro-detection, macro-detection and windowing steps performed during the second pass are used to assign an image type to the pixel); and

processing image data of the pixels of the image based on the classification of the pixel (see paragraph [0063] *the page segmentation and classification means 40 may also include image processing means 48 for processing the image data after each of the pixels has been labeled with an image type and as belonging to a particular window*).

Lin does not disclose the background level being based on substantially all of the pixels of the image.

However, Applicant's admitted prior art discloses conventionally background detection is performed by sampling pixel values either with a sub-region of the document or across the whole document (*i.e., being based on substantially all of the pixel values (intensity level) of the image (see paragraph [0012])*).

It would have been obvious to ordinary skill in the art at the time when the invention was made to use Applicant's admitted prior art teachings to modify Lin's method by detecting the background based on substantially all of the pixels' intensity level of the image in order to more accurately reproduce the image, [*Applicant's admitted prior art see paragraph [0009] lines 6-10*].

Regarding claim 16, *Lin discloses the image processing method of claim 15, further comprising storing a label associated with each of the pixels, wherein the label of each of the pixels is based on results of the classification step and the checking step for the pixel (see paragraph [0063] and [0064] *classification means 40 may also include image processing means 48 for processing the image data after each of the pixels has been labeled with an image type and the image data obtaining means 36 could include**

a scanner or device for reading a stored image from a memory. The device might also include image data generation means 38 for generating image data to be segmented and classified by the two pass method)), Applicants admitted prior art further discloses sampling pixel values either within a sub-region (as disclosed by Lin) or across the whole document image {paragraph [0012] and the combined method of Lin and Applicant's admitted prior art is using substantially all pixels of the document.

Regarding claim 18, refer to claim 2 rejection.

Regarding claim 17, *Lin discloses the image processing method of claim 15, wherein classifying a pixel of the image comprises classifying the pixel as one of smooth contone, rough contone, text, background, graphics and halftone (see paragraph [0052] and [0057] the image data comprises multiple scanlines of pixel image data, each scanline typically including intensity information for each pixel within the scanline. Typical image types include graphics, text, low-frequency halftone, high-frequency halftone, contone, etc).*

Regarding claim 18, refer to claim 2 rejection.

Regarding claim 19, *Lin discloses the image processing method of claim 18, wherein the checking step comprises comparing an intensity of the pixel with an intensity of the white point of the image (see paragraph [0053] each pixel is examined and preliminary determination is made as to the image type of the pixel. In addition, the intensity of its surrounding neighboring pixels. A judgment is made as to whether the intensity of the pixel under examination is significantly different than the intensity of the*

surrounding pixels and [0071], likewise, a common type of image is text of different colors on a white background).

Regarding claim 20, *Lin discloses the image processing method of claim 19, wherein when the pixel is classified as smooth contone and the intensity of the pixel is not less than the intensity of the white point of the image, the pixel is reclassified as background (see paragraph [0052], [054] and [0057] the statistics are examined in an attempt to classify each window. Windows that appear to contain primarily a single type of image data are classified according to their dominant image types. Windows that contain more than one type of image are classified as "mixed").*

Regarding claim 21, *Lin discloses the image processing method of claim 19, wherein when the pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image, the pixel is reclassified as smooth contone (see paragraph [0052], [054] and [0057] the statistics are examined in an attempt to classify each window. Windows that appear to contain primarily a single type of image data are classified according to their dominant image types. Windows that contain more than one type of image are classified as "mixed").*

Regarding claim 22, *Applicant's admitted prior art further discloses the image processing method of claim 15, wherein the portion of the pixels comprises substantially all of the pixels of the image (see paragraph [0012] conventionally, background detection is performed by sampling pixel values either within a sub-region of document (typically, the leading edge) or across the whole document).*

(10) Response to Argument

Appellants, on pages 17-21, argue Lin in view of Appellants' Admitted prior art do not disclose "determining a background intensity level of an image, the background intensity level being based on substantially all of the pixels of the image" in claims 1, 8, and 15.

The examiner respectfully disagrees with Appellants, Admitted prior art background section discussed conventionally background detection is preformed by sampling pixel values either with a sub-region of the document or across the document (i.e., being based on substantially all of the pixel values (intensity level) of the image, therefore Admitted prior art discloses determining a background intensity level of an image, the background intensity level being based on substantially all of the pixels of the image (see paragraph [0012]).

Appellants, on pages 22-23, argues Lin in view of Appellants' Admitted prior art do not disclose and "determining if reclassification is required" and "reclassifying the pixel when reclassification is required" in claims 1,8 and 15.

The examiner respectfully disagrees with Appellants, Lin discussed by using a confidence factor reclassify all pixels of the same class classified and also recording, labeling each pixel in the window, and assigning an image type. Therefore Lin discloses determining if reclassification is required (*see paragraphs [0054]-[0055], [0059]*) and reclassifying the pixel when reclassification is required (*see paragraphs [0054]-[0055], [0059]*).

Appellants, on page 23 argue the February 2, 2009 Final rejection and April 14, 2009 Advisory Action do not respond to Appellants argument that Lin teaches away

from the claims 1 and 8 features, "determining if reclassification is required". In final rejection addressed determining if reclassification is required or reclassifying the pixel when reclassification is required. The examiner respectfully disagrees, Lin discloses determining if reclassification is required (see paragraphs [0054]-[0055], [0059]).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For above reasons, it is believed that the rejections should be sustained.

Respectfully Submitted,

/A. k. W./

Patent Examiner, Art Unit 2624

Conferees:

/Samir A. Ahmed/

Supervisory Patent Examiner, Art Unit 2624

/VIKKRAM BALI/

Supervisory Patent Examiner, Art Unit 2624